

## CLAIMS

1. A method for drying bulk material, especially bark, sawdust, pretreated sludge or a mixture of these in a drying space (7), in which method
  - 5 - material to be dried is conveyed by means of one or several drying conveyors (15) located in the drying space (7),
  - gas is fed into the drying space (7),
  - the gas is heated,
  - the heated gas is conducted through said one or several drying conveyors
  - 10 (15) conveying the material to be dried,
  - the gas that has passed through the drying conveyor (15) is conducted out of the drying space (7),

**characterised in that** gas is heated with waste water produced in a pulp or paper production process, whereby said waste water is simultaneously cooled.

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2. A method as claimed in claim 1, **characterised in that**, in this method,
  - the drying conveyor (15) comprises a chain conveyor (19), which supports and carries along a wire (21), on which the material to be dried is conveyed, whereby
  - 20 - heated gas is conducted through the wire (21) and through the material to be dried that is carried on the wire.

3. A method as claimed in claims 1 or 2, **characterised in that** the gas to be heated is air.

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4. A method as claimed in claim 1, 2 or 3, **characterised in that** the temperature of the heated gas is 35–85 °C.

- 30 5. A method as claimed in any of the claims 1–4, **characterised in that** the gas is heated by hot waste water in a heat exchanger (13).

6. A method as claimed in any of the claims above, **characterised in that** the gas is heated in the heat exchanger (13) in the drying space (7).

7. An apparatus (1) for drying bulk material, especially bark, sawdust, pretreated sludge or a mixture of these, which apparatus (1) comprises

- a drying space (7),
- at least one gas heating device (13),

5 - one or several blowers (9) located outside the drying space (7), which blower is arranged to blow gas into the drying space (7) via said gas heating device (13) and/or to suck cooled gas out of the drying space (7), and

- one or several drying conveyors (15) located in the drying space (7), through which drying conveyor the heated gas is arranged to travel,

10 **characterised in that** the apparatus (1) furthermore comprises connectors for conducting waste water produced in a pulp or paper production process into and out of the gas heating device (13), which gas heating device is arranged to heat gas with waste water and simultaneously to cool waste water with said gas.

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8. An apparatus as claimed in claim 7 **characterised in that** the drying conveyor (15) comprises a chain conveyor (19) equipped with a drive apparatus (17) and a wire (21) supported by the chain conveyor and running on the chain conveyor, and that the heated gas is arranged to travel through a bed of

20 material to be dried lying on the wire (21) and through the wire (21).

9. An apparatus as claimed in claim 8 **characterised in that** the wire (21) and the chain conveyor (19) are substantially equal in width.

25 10. An apparatus as claimed in claim 8 or 9 **characterised in that** the width of the wire (21) is 2–8 metres.

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11. An apparatus as claimed in any of the claims 8–10 **characterised in that** the chain conveyor (19) has two chains (33) and, between these, wire support members (35).

12. An apparatus as claimed in any of the claims 8–11 **characterised in that** the speed of the chain conveyor (19) is 0.02–0.1 metres per second.

13. An apparatus as claimed in any of the claims 7–12 **characterised in that** at least one gas heating device (13) is arranged inside the drying space (7).

14. Use of a wire (19) as the conveyor belt of a drying conveyor (15) for bulk material, especially bark, sawdust, pretreated sludge or a mixture of these required for cooling waste water produced in a pulp or paper production process.

15. A method for cooling waste water produced in a pulp or paper production process, in which method

- waste water to be cooled is fed into a heat exchanger (13),
- cooled waste water is conducted out of the heat exchanger (13),
- gas for cooling the waste water is fed into the same heat exchanger (13),
- heated gas is conducted out of the heat exchanger (13),

15 **characterised in that**, in this method,

- heated gas extracted out of the heat exchanger (13) is conducted through one or several drying conveyors (15) and through material to be dried conveyed on the drying conveyer (15), whereby said material is dried by the heated gas.

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16. An apparatus (1) for cooling waste water produced in a pulp or paper production process, which apparatus (1) comprises

- at least one heat exchanger (13) for cooling waste water,
- connectors for guiding the waste water to be cooled to the heat exchanger (13) and connectors for guiding the cooled waste water out of the heat exchanger (13),
- connectors for guiding the cooling gas to the heat exchanger (13) and connectors for guiding heated gas out of the heat exchanger (13),

**characterised in that** the apparatus (1) furthermore comprises

- a drying space (7),
- one or several blowers (9) arranged to blow gas via said connectors and heat exchanger (13) into the drying space (7) and/or arranged to suck cooled gas out of the drying space (7),

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- one or several drying conveyors (15) located in the drying space (7), through which drying conveyor heated gas is arranged to travel,

17. A pulp mill comprising at least one apparatus according to claim 16.

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18. A paper mill comprising at least one apparatus according to claim 16.